

REMARKS

In response to the Final Office Action dated February 12, 2007, claims 1-3, and 5 are amended. Claims 1-6 are now active in this application. No new matter has been added.

The specification was objected to regarding the sentence at page 4, lines 8-10. Applicant has amended the sentence to clarify the meaning. Thus, Applicant respectfully submits that this objection has been overcome.

Claims 2, 3, and 6 were objected to because of informalities. These claims have been amended according to the Examiner's suggestions. Thus, Applicant respectfully submits that these objections have been overcome.

Claims 1-6 were rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential elements. The Office Action asserts, at page 3, that claims 1 and 3 omit essential elements to produce an analytical shell model as set forth in the preambles. However, Applicant submits that independent claims 1 and 3 do contain elements to produce an analytical shell-model as set forth in the preambles, comprising an offset-surface producing means, a seam-surface producing means, and an internal-surface producing means. Thus, Applicant respectfully submits that the essential elements are present.

Additionally, the claim 3 term "arbitrary two (2) surfaces" has been amended to provide sufficient antecedent basis.

Claims 1-6 were rejected under 35 U.S.C. § 101, as allegedly directed to non-statutory subject matter. Specifically, the Office Action asserts that these claims are software per se, and do not produce a useful or a tangible result. Applicant respectfully traverses this rejection.

Independent claims 1 and 3 recite apparatuses that produce an analytical shell-model. An apparatus is a "machine" under 35 U.S.C. § 101. Thus, these claims are not software per se.

Further, independent claims 1 and 3 are directed to transforming data representing physical objects for analysis and design. *State Street*, 149 F.3d at 1373, 447 USPQ2d at 1601, states that “transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculation into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces ‘a useful, concrete and tangible result’ – a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.” Producing an analytical shell model from data representing physical objects achieves a useful, concrete, and tangible result, analogous to the final share price in *State Street*.

Thus, Applicant respectfully submits that claims 1-6 are directed to statutory subject matter, and the rejection under 35 U.S.C. § 101 should be withdrawn.

Claims 1-2 were rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by Tonooka, U.S. Patent 7,002,575.

Claims 3, 5, and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tonooka in view of Kawaguchi et al., U.S. Patent 7,038,700.

Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Tonooka in view of Kawaguchi, and further in view of Mobley et al., “An Object Oriented Approach to Geometry Defeaturing for Finite Element Meshing.”

These rejections under 35 U.S.C. § 102(e) and 35 U.S.C. § 103(a) are traversed.

Independent claim 1 recites, in pertinent part, **“a pair-surfaces acknowledging means for acknowledging two (2) surfaces as pair-surfaces data**, being equal or less than the reference-plate thickness size, which is inputted by said reference-plate thickness inputting means, in face-to-face distance between two (2) arbitrary surfaces constructing the configuration

model; **a top-bottom side rib attributes acknowledging means for classifying the pair-surfaces data** registered by said pair-surfaces acknowledging means into a top-side surface, a bottom-side surface and a rib surface, through producing a neighboring graph of connecting nodes themselves to the neighboring surfaces by edges, with presuming the surfaces to be nodes to the configuration model, and searching a loop including two (2) or more of the edges of a pair attribute, while determining a non-rib surface when the number of nodes within the loop is equal or less than four (4), and thereby registering the attributes as top-side surface data, bottom-side surface data, and rib surface data, respectively.”

Anticipation under 35 U.S.C. § 102 requires that “each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed Cir. 1987). Additionally, to establish *prima facie* obviousness under 35 U.S.C. § 103(a) requires that all the claim limitations must be taught or suggested by the prior art. *In re Rokya*, 490, F.2d 981, 180 USPQ 580 (CCPA 1974). At a minimum, the cited prior art does not disclose or teach (expressly or inherently) the above recited limitation.

The Office Action, at pages 5 and 6, discusses FIG. 1, FIG. 2, column 3 at lines 34-37, lines 47-51, lines 57-60, and column 4 at lines 44-58 of Tonooka.

However, Tonooka, at the above cited lines, merely states:

A design supporting apparatus 10 comprises a computer provided with at least a central processing unit (CPU) and a memory, and various functions related to design support are realized by a program loaded into the memory. To be specific, the design supporting apparatus 10 comprises a feature type determination section 12, a graphical element assignment section 14, a dimension calculation section 16, and a feature addition section 18.

In the feature type determination section 12, using a "base model" called a basic feature as a parent, the type of feature for adding a taper, a shell or the like is determined. The feature type may be determined, for example, by assignment operations by an operator (designer), or by attributes of a graphical element. In

the graphical element assignment section 14, various graphical elements comprising a two-dimensional drawing or a point between two graphical elements are assigned by assignment operations by an operator. In the dimension calculation section 16, dimensions that characterize a feature are calculated based on the feature type determined by the feature type determination section 12, and the graphical element (referred to hereunder as "assigned element") or the point between graphical elements (referred to hereunder as "assigned point") assigned by the graphical element assignment section 14. In the feature addition section 18, a feature that reflects a dimension calculated by the dimension calculation section 16 is added to the basic feature. . .

On the other hand, in step 7 through step 10, processing when the feature type is a shell is executed. That is, in step 7, an edition face of the basic feature to which a shell, being a feature, is added is assigned by assignment operations by the operator. In step 8, a point (assigned point) between two graphical elements forming a shell on a two-dimensional drawing is assigned by assignment operations by the operator as shown in FIG. 5. **In step 9, a subroutine is called for calculating a thickness (linear dimension) of the shell.** In step 10, a shell that reflects the calculated linear dimension is added to the edition face of the basic feature. The processing in step 8 corresponds to the assignment function and the assignment means, and the processing in step 9 to the dimension calculation function and the dimension calculation means. [Emphasis added]

Tonooka does not teach or suggest a "pair surfaces acknowledging means" and a "top-bottom side rib acknowledging means" as recited in independent claim 1. For example, Tonooka does not mention acknowledgement of a pair of surfaces any being equal or less than the reference-plate thickness size. Tonooka merely calculates the thickness and/or an angle between two (2) lines (i.e., the graphical element) on a two-dimensional drawing or sketch. Further, Tonooka is directed toward two-dimensional models, whereas independent claim 1 is directed toward three-dimensional models.

Thus, Applicant respectfully submits that independent claim 1 is not anticipated by Tonooka.

Further, the other cited references do not obviate the deficiencies of Tonooka.

Kawaguchi, for example, merely discloses a method and an apparatus for producing a mesh having a new configuration by modifying or changing the mesh model, and does not teach

or suggest the above recited limitation of independent claim 1. Additionally, Kawaguchi operates on a mesh model, and not on a three-dimensional solid model.

Additionally, Mobley merely discloses implying or defeaturing a configuration model, and does not teach or suggest the above recited limitation of independent claim 1. Specifically, Mobley merely displays the portion to be simplified in the configuration thereof, and therefore it does not teach to display the attribute (i.e., the top/bottom rib surface) for producing the shell model. Mobley does use the words “top” and “bottom,” in Mobley, but these words are only used to indicate the position of the part, and not the attribute of the model.

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as independent claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable.

Thus, Applicant respectfully submits that dependent claim 2 is allowable for at least the same reasons as independent claim 1.

Independent claim 3 recites, in pertinent part, “a pair-surfaces acknowledging means for acknowledging two (2) surfaces, being equal or less than the reference-plate thickness size, which is inputted by said reference-plate thickness inputting means, in face-to-face distance between two (2) arbitrary surfaces constructing the configuration model; a top/bottom side rib attribute acknowledging means for acknowledging the two (2) surfaces acknowledged by said pair-surfaces acknowledging means to be one of a top side surface, a bottom side surface, and a rib surface.”

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As discussed above with respect to independent claim 1, the cited publications (Tonooka, Kawaguchi, and Mobley) do not teach or suggest "a pair-surfaces acknowledging means" and do not teach or suggest "top/bottom side rib attribute acknowledging means."

Thus, Applicant respectfully submits that independent claim 3 is allowable for reasons similar to independent claim 1.

Accordingly, as independent claim 3 is patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable.

Thus, Applicant respectfully submits that dependent claims 4-6 are allowable for, at a minimum, the same reasons as independent claim 3.

Accordingly, it is urged that the application, as now amended, is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, if any, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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